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ABSTRACT

Describes a Human Life Science program for the elementary school emphasizing physical, mental, emotional, and social growth. The program consists of two units: (1) The Human Body, and (2) Drugs, including Drug Information, Alcohol, and Tobacco. The guide outlines basic concepts to be developed, sets of objectives, background information, teaching suggestions, and resource materials. Suggestions for integration of this program into the existing curriculum are included. (MA)

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DIVISION OF INSTRUCTIONAL SERVICES

CURRICULUM BRANCH

U.S. DEPARTMENT OF HEALTH
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HUMAN LIFE SCIENCE

Years 1 - 7

SE 026 784

VICTORIA, B.C.
1971

PROVINCE OF BRITISH COLUMBIA

DIVISION OF INSTRUCTIONAL SERVICES

CURRICULUM BRANCH

HUMAN LIFE SCIENCE

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INTRODUCTION

A. HUMAN LIFE SCIENCES

1. What is Human Life Science?

Human Life Science in the elementary school is the study of man. Four mutually dependent aspects of human development form the basis of this programme:

(a) physical growth
(b) mental growth
(c) emotional growth
(d) social growth

2. The specific aim of Human Life Science instruction.

The aim of this programme is to develop in the child some knowledge of the total life processes and the inter-relationships of human beings.

3. The scope of the Human Life Science Programme.

This programme consists of two units:

(a) The Human Body
(b) Drugs (including Drug Information, Alcohol and Tobacco)

B. IMPLEMENTATION

SUCCESSFUL IMPLEMENTATION OF THE HUMAN LIFE SCIENCE PROGRAMME DEPENDS UPON THE INVOLVEMENT OF EVERY TEACHER

The significance of the foregoing statement will become increasingly apparent upon examination of the programme as outlined in this guide. Two important factors become immediately evident:

1. The programme does not consist of a series of course prescriptions.

2. It is not envisaged that a specific amount of time will be set aside each day or each week for instruction in Human Life Science.

The responsibility for the development of a programme for a specific class rests with the teacher. It is recognized that programmes developed will vary as dictated by environmental conditions, community needs, teacher selection and pupil interest. For the guidance of the teacher, the guide outlines basic concepts to be developed and sets of objectives to be realized for each unit. In addition, background information for the teacher and teaching suggestions are included in the guide as well as lists of resource materials. A number of books are prescribed and provided for the teacher. For specific titles, teachers are referred to the Prescribed Textbook List, published annually by the Curriculum Branch.

The programme involves the use of the "teachable moment" and the extensive use of integration with other subjects. The guide suggests areas in the curriculum where integration with other disciplines may be the best practical vehicle for full development of the topic.

As Human Life Sciences will not appear on the classroom timetable, as such, and as the programme for each school will be tailored by the staff to meet the needs of the pupils in a particular school, the role of the principal with regard to the programme becomes extremely important. Staff members will have to work as a team in the development of the programme for their school to ensure that important aspects are covered and that unnecessary repetition is avoided.

While the overall responsibility for instruction rests with the principal and teachers on the staff, situations may arise when it may be advisable to have community resource people in the classroom to present special material or to answer pupil questions. Certainly, it would seem wise to involve these valuable resource people in inservice activities.

C. EVALUATION

The Human Life Science Programme would be viewed as a service to pupils rather than a series of courses where specific information is to be "covered" and particular skills are to be "mastered". Certainly, the developers of the programme did not envisage it as courses to be "passed or failed".

To develop in the child some knowledge of the total life processes and the inter-relationships of human beings is the specific aim of the programme. Therefore,

evaluation must result from the teacher's professional judgment and observation of:

1. the child's growth in his respect for himself and others
2. the child's ability to apply knowledge of his bodily function to make critical decisions
3. the child's acquisition of accurate basic information about the human body and its functions
4. the interest and enthusiasm of the child

Unit I THE HUMAN BODY

Introduction

Human development is an extensive and complex study. The Human Life Science guide can only suggest to the teacher some areas of investigation.

This guide should be used as an aid to stimulating the creative abilities of the teacher. He will provide effective leadership in helping pupils to extend their interests and make decisions relating to their physical, mental, emotional and social development.

Successful Implementation

Implementation of this unit demands that:

(1) the home, the school and the community share responsibility in this area of education;

(2) teachers study this unit in its entirety before attempting to implement individual sections;

(3) teachers acquire current and accurate information;

(4) teachers be prepared to discuss, objectively pupil questions that may arise in the school environment.

Basic Concepts

The human body follows an orderly pattern of growth, but no two humans follow exactly the same pattern.

Objectives

(1) To help the child develop a respect for the human organism.

(2) To help the child acquire accurate basic information about the human body and its functions, using acceptable terminology.

(3) To help the child observe and understand the growth changes he and other children are experiencing.

(4) To assist the child in making critical decisions relating to the function and capabilities of his body.

Presentation of Content

What to teach and when to teach it are important decisions that the teacher must make; he must identify the clues that will enable him to help each child to a better understanding of himself and the effects of his decision-making.

This guide does not outline the content for each grade in sequence as the subject matter is intended to be integrated with other facets of the curriculum.

As the child develops, the four aspects of growth:

A. Physical
B. Mental
C. Emotional
D. Social

can be treated in increasingly greater depth.

THE TOPICS MUST BE IMPORTANT AND INTERESTING TO THE CHILD AT THE TIME HE PURSUES THEM, AND SHOULD BE RELATED TO HIS EVERYDAY LIVING. THE MATURITY OF THE CHILD, TOGETHER WITH HIS ENVIRONMENT, THE INTERESTS AND CAPABILITIES OF THE TEACHER, AND THE AVAILABILITY OF RELIABLE RESOURCE MATERIALS WILL DETERMINE THE DEPTH OF THE STUDY.

Suggested Development

This unit on the Human Body may be developed in a variety of ways:

1. Teachable moments or opportune events;
2. Discussion arising from direct questions, either teacher or pupil originated;
3. Integration with all other subject areas;
4. Independent research;
5. Group activities.

As a guide to teachers the following sample question is developed using the five approaches listed above:

HOW HAVE I CHANGED IN THE PAST YEAR?

(In considering this question, all four aspects of human growth can be explored.)

STRESS: Each child has his OWN growth pattern.

The outline below is one possible approach; there are many others.

BACKGROUND

To establish a background, a child investigates certain mileposts, posed by the teacher or by the child himself, marking his growth. His own interests will determine which he will want to explore.

	Suggested Development
1. How much did I weigh when I was born?	Discussion
2. What things could I do when I was born?	or
3. When did I first walk by myself?	Integration
4. How old was I when I spoke my first word?	or
5. How old was I when I first expressed ideas in sentences?	Independent Research
6. How old was I when my first tooth appeared?	or
7. When did I lose my first tooth?	Group Activity
8. How old was I when I started school?	or
9. How old was I when I first read independently?	Teachable Moment
10. How old was I when I learned to swim, skate, skip, throw a ball, etc.?	or
11. How old was I when I first joined a club or gang? (Cubs, Brownies, Little League, etc.)	Opportune Events
12. Do I cry as much as I used to?	
13. Do I (still) have temper tantrums?	
14. What things make me angry now?	
15. How much do my parents still do for me?	
16. Have my ideas of friends (friendship) changed?	

Charts and booklets may be made of many of the above patterns in order to record individual growth.

A. PHYSICAL GROWTH AND CHANGE

There is no better model than the child himself.

HOW HAVE I CHANGED IN THE PAST YEAR?

The following topics and vocabulary provide material and correct terminology which may come up in discussion. Additional topics for study may be suggested by pupils themselves. It is emphasized that the suggested vocabulary list is to be used as a guide only.

1. Height (See sample development below)

Suggested Vocabulary
- measure, stature, bones, growth-plate, fitness, nutrition, muscles, posture, environment, heredity, rate

SAMPLE DEVELOPMENT

The topic height might be developed along the following lines:

Pupil thinking may be guided by such teacher-originated questions as:

(a) These children are the same age, but are they all the same height?

(b) Who is the tallest, the shortest?

(c) If Billy and Johnny look the same height, how can we prove that they really are?

Select a group of children of the same sex and approximate age. Have the class observe, compare, measure and record the height of each child. Measuring and recording by chart or graph may be done under teacher guidance.

This may lead to a child-originated question such as:

Why is Mary taller than Betty when they are both the same age?

This may lead into a consideration of factors that influence growth (See #15 below)

Investigation as indicated above of any or all of the following aspects of growth may be initiated by a teachable moment or an opportune event, and may involve discussion, integration, independent research and/or group activities.

Suggested Development

2. Weight

Suggested Vocabulary
- appetite, nutrition, fads, heart, over (under) weight.

3. Bones

Suggested Vocabulary
- skeleton, ligaments, tendons, marrow, cartilage, tissue, joints, fractures, discs, calcium, epiphysis (growth-plate), cells, blood (heart, circulation).

4. Teeth

Suggested Vocabulary
- crown, neck, root, nerve, gum, enamel, fluoride, bone tissue, primary, permanent, dentist, orthodontist, brace, false teeth (dentures), abscess, molars, bicuspids, bacteria, calcium, nutrition, prevention, bills, archaeology.

5. Hair

Suggested Vocabulary
- follicle, oil glands, lanolin, epidermis, root, scalp, pigment, dandruff, baldness, lice (Pediculosis), shampoo, fashion, goose-flesh (goose-bumps).

6. Skin

Suggested Vocabulary
- dermis, epidermis, texture, colour, pigment, freckles, sweat glands, blackheads, acne, cleanliness, parasites, boils, perspiration (temperature control) sunburn, suntan, corns, calluses, plantar warts.

Discussion

or

Integration

or

Independent Research

or

Group Activity

or

Teachable Moment

or

Opportune Event

Suggested Development

7. Voice

Suggested Vocabulary
- larynx, laringitis, trachea, respiratory, vocal chords, Adam's apple, tongue, nose, diaphragm.

Discussion

or

8. Cells

Suggested Vocabulary
- nucleus, protoplasm, tissue, embryo, reproduction, red cells, white cells, function, microscope, micro-organism, cellulose, oxygen, carbon dioxide, virus, division of chromosomes, genes, egg, corpuscles, membrane.

Integration

or

9. Digestion

Suggested Vocabulary
- teeth, salivary glands, throat, oesophagus, stomach, digestive juices, spleen, liver, pancreas, gall bladder, intestines, alimentary canal, colon, bile, diet, nutrients, secretions, sphincter, organs, laxatives, elimination of unused products.

Independent Research

or

Group Activity

or

10. Respiration and Circulation

Suggested Vocabulary
- thrombus, thrombosis, coronary circulation, hemoglobin (red blood cells), capillaries, alveoli, plasma, oxygen, carbon dioxide, atria, valves, mitral, aortic, ventricles, stenosis, cardiac arrest, angina, pectoris, emphysema, asthma, membrane, cholesterol, (Fatty plaques), arteries, veins, heart, exercise, stroke, anoxia, hyperventilation, pulse, transplant, heart murmur, blood pressure, haemophiliac.

Teachable Moment

or

Opportune Event

Suggested Development

11. Brain and Nervous System

Suggested Vocabulary
- skull, brainstem, cranium, nerves, (motor, sensory), reflexes, stimulus, impulse, hemisphere, cells, voluntary and involuntary actions.

Discussion

or

12. Muscular Development, Co-ordination

Suggested Vocabulary
- perceptual-motor skills (hand-eye-muscle-brain), proper way to lift objects, balance, visual, auditory, tactile, strength, speed, stamina, endurance, fibres, tendon, muscle-tone, contract, relax, senses, protein, spatial relationships, focussing, ligament.

Integration

or

Independent Research

13. Nutrition

Suggested Vocabulary
- nutrients, calories, energy, food, weight, control, vegetarian, dairy, diet, meals, super-market, appetite, obesity, deficiency, substitutes.

or

Group Activity

or

14. Hormones and Glands

Suggested Vocabulary
- physical growth, adolescence, maturity, organs, sweat, pituitary, liver, salivary, thyroid.

Teachable Moment

15. Factors that Influence Growth

or

Suggested Vocabulary
- heredity, physical, cultural and emotional environment, food, rest, sleep, recreation, physical exercise, illness, disease.

Opportune Event

Suggested Development

16. Some Protective Devices of the Body

Suggested Vocabulary
-eye-sockets, eyebrows, tears, shape of skull, rib cage, vertebrae, pain, tanning of skin, racial differences, pigmentation, freckles, healing, restorative powers of skin, cell senses, warnings through senses of sight, hearing, smell, touch, taste, control of body temperature, perspiration, sweat glands, reflex actions, nerves, muscles, brain, fainting, blood clotting, antibodies, shots, immunization, vaccination, fear, (effect on skin, breathing, kidneys, blood).

Discussion

or

Integration

or

Independent Research

or

Group Activity

or

Teachable Moment

or

Opportune Event

17. Special Environmental Influences

(a) Internal-Homeostasis

"By far the most important concept in the entire field of physiology goes by the name of homeostasis". The healthy body makes constant adjustments - "stay the same" internally which might be described as maintaining a steady state, or balance or equilibrium in relation to a changing external environment. Homeostasis, this "staying the same" internally, is the result of complex adjustments which the body constantly makes and which might, for example, involve, skin, brain, nerves, heart, blood, vessels, lungs, kidneys, etc. all working together co-operatively.

For example, the internal temperature of the healthy body remains the same in cool weather or hot, - the fluid balance of the body remains constant no matter how much one drinks, - exercise brings about the adjustments of deeper, faster breathing and faster heart beats.

Suggested Development

17. Special Environmental Influences (con't)

(b) External - Safety Within the Environment (Awareness of Hazards)

Discussion

or

Integration

or

Independent Research

or

Group Activity

or

Teachable Moment

or

Opportune Event

Suggested Vocabulary

- home - electricity, slippery floors, burns, scalds, medicine cabinets, toys, matches, storage in basement and attic.
- school - science laboratory, gymnasium, playground, halls.
- recreation - swimming, cramps, currents, boats, artifical respiration, resuscitation.
- traffic - rules of the road, common sense, consideration for others, hitchhiking, bicylcles, pedestrians, law.
- pollution - air, water, atmosphere, noise, untidiness, aesthetic values, communities, responsibility.

B. MENTAL, SOCIAL AND EMOTIONAL GROWTH

"A modern health programme helps children grow in self-understanding and in the ability of understanding their fellow human beings." *

This requires:

1. A classroom climate where a warm, secure and comfortable feeling exists between pupils and teacher.
2. Opportunities for non-judgemental classroom discussion about what is relevant and important to the child.
3. Creative activities which may involve role-playing, art, music, picture studies, physical outlets for strong emotion, open-ended discussions concerning classroom, playground or community events.

For instructional information on mental, social and emotional growth of children, the teacher is referred to:

Gallagher, HOW ABOUT YOU, (Ginn)

Bauer, W.W. et al., HEALTH FOR ALL, Scott, Foresman (Gage)

Baker and Fane, UNDERSTANDING AND GUIDING YOUNG CHILDREN (Prentice-Hall)

Additional references may be found in the reference section on page 16 for this unit.

Consciously or unconsciously the school is prompting the continous growth of children, mental , emotionally and socially throughout the day. The following topics and vocabulary are suggested to prepare teachers for the opportune moment when, through discussion, role-playing, etc., definite guidance may be given.

SAMPLE QUESTION:

HOW HAVE I CHANGED IN THE PAST YEAR?

Investigation may include such aspects as:

* W.W. Bauer et al., HEALTH FOR ALL, Scott Foresman (Gage)

Suggested Development

1. Ability to make decision and think independently.

   Suggested Vocabulary
   -discover, observe, think, investigate, compare, question, understand, solve, knowledge, critical thinking, intelligence, experience, skills, ideas, problem, responsibility, feeling, etc.

2. Desirable degree of control over emotions.

   Suggested Vocabulary
   -temper, tantrums, jealousy, envy, sulkiness, courtesy, tempermental, selfishness, stubborness, indignation, responsibility, self-control, hysteria, fear, anger, love, hate, depressed,grief, tension, frustration, etc.

3. Appreciation of individual differences

   Suggested Vocabulary
   -solitary, introvert, extrovert, pursuit, needs, relationship, culture, manners, customs, physique, religion, personality, self-acceptance, influence, discrimination, value-judgement, anxiety, conscious, drive, emotion, frustration, racial, prejudice, instinctive, rationalize, reality, relaxation, beliefs, tension, unconscious, habits, factors, behaviour, tolerance, decision-making, thinking, responsiblity, differences, appreciation, mores, etc.

4. Relationships within the family

   Suggested Vocabulary
   -two parent family, one parent family, masculinity, femininity, communal family, foster family, roles, culture, affection, heritage, siblings, sibling rivalry, traditions, society, responsibility, maturity, beliefs, community, customs, co-operation, sharing, communication, obligation.

Opportune Event

or

Discussion

or

Role playing

or

Integration

or

Creative dramatics

or

Independent Research

or

Cultural and Recreational Activities

or

Teachable Moment

or

Audio-Visual Aids

Additional topics for study and discussion;

5. Reaction to criticism
6. Ability to follow directions
7. Ability to solve problems
8. Ability to interact with others
9 Growing sense of responsibility
10. Development of self-confidence as a result of wise decision, good self-image.
11. Ability to give and take
12. Willingness to become involved with other people
13. Capacity for love and friendship
14. Acceptance of responsibility for actions
15. Ability and desire to make new friends
16. Interest in other people
17. Respect for the law, and for the rights of others

Other more specific questions may arise, either growing out of, or helping to initiate the main question.

e.g., What kind of person becomes an astronaut?
How do I discover what the world is like?
How does my broken arm heal itself?
What does it mean to be an adolescent? an adult?
What happens when I eat an apple?
(digestion, teeth, etc.)

These questions and many others will suggest themselves. They may be developed in a manner similar to that used with the question, "How Have I Changed in the Past Year?"

REFERENCE LIST

Current and accurate information is essential to the successful implementation of this unit.

Articles and resource findings appear frequently in professional journals and in the popular press. While bibliographies soon become outdated, the following items are recommended but are neither inclusivenor final.

A. Prescribed Texts

See current issue of the Prescribed Textbook List published annually by the Curriculum Branch.

B. Supplementary References

- Gallagher, HOW ABOUT YOU, (Ginn, 1965)
- Dubos, HEALTH AND DISEASE, Silver Burdett (General Learning Corporation)
- Epstein & Epstein, THE FIRST BOOK OF THE WORLD HEALTH ORGANIZATION (Smithers & Bonellie)
- Nourse, THE BODY, Silver Burdett (General Learning Corporation)
- Pfeiffer, THE CELL, Silver Burdett (General Learning Corporation)
- Tanne & Taylor, GROWTH, Silver Burdett (General Learning Corporation)
- World Health Magazine (Queen's Printer Bookshop, 657 Granville Street, Vancouver)
- Fluoridation and Dental Health Reference Manuals (Department of Health Services and Hospital Insurance - order through local Health Branch)
- Other pamphlets and reprints are available from local Public Health Office

C. Audio-Visual Resources

- Food Models - Milk Foundation of B.C., 2940 Main Street, Vancouver, B.C.

The Health Branch film library is no longer in a position to supply films and filmstrips to British Columbia schools but will continue to offer advisory service.

NOTE: Watch for pertinent programmes on radio and television in The Teacher's Bulletin for B.C. School Broadcasts.

For example films such as Cosmic Zoom, Carrousell, Neighbours, A Chairy Tale may be available from the local school resource centre, the National Film Board, The Department of Education Audio-Visual Branch.

D. Various Local Resources

- People - pharmacist, physician, public health personnel, probation officer, etc.

- Reference Sources - public library, school or district resource centre.

- News media - papers, radio, T.V.

DRUGS: PART I

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D R U G S

Introduction

This guide is designed to meet the need for information about and guidance concerning the use of drugs. The suggested guidelines will give direction to school boards, administrators, teachers and school personnel in the development of these units. It is realized that no one programme can meet the needs of all people in all areas. This guide should be used as a flexible tool to stimulate the creative thinking and abilities of teachers. Each teacher may adopt those parts which best suit his particular class, school or community.

Successful implementation of this programme demands that:

1. the school, the home, and the community share responsibility in this area of education.

2. this guide be studied in its entirety before attempting to implement individual sections.

3. teachers have current and accurate information regarding:
   (a) types of drugs
   (b) symptoms of drug abuse
   (c) effects of drugs
   (d) the idiom of drug users

4. teachers be prepared to discuss questions which may arise in the school environment.

5. teachers should provide effective leadership in guiding students to make decisions.

Objectives

1. To help the child acquire accurate basic information about drugs.

2. To help the child develop an understanding that drugs properly used are of inestimable value to mankind.

3. To help the child understand the effects of drug abuse.

4. To help the child acquire knowledge of government laws and regulations concerning drugs, including reasons for the laws.

Basic Concepts

1. Responsibility in the use of drugs is essential to the well-being of society.

2. Drugs are legally dispensed
   (a) as prescriptions
   (b) over the counter
   (c) as patent medicines

3. Drugs require responsible dispensing, handling and storage.

4. The abuse of drugs is detrimental to the individual and society.

Presentation of Content

It is important for the teacher to keep in mind the following definition:-

D R U G S A R E:-

substances (other than food) that alter body function. Many drugs are used to alleviate, cure or prevent sickness, disease or other like conditions or to alleviate, or prevent the symptoms of a sickness or disease.

This guide does not outline the content for each grade in sequence as the subject matter is intended to be integrated with other facets of the curriculum. The depth and breadth to which topics are studied will depend upon the time, place, interests, and maturity of the pupils. The community needs as dictated by the local environment will also affect the content presented.

The drug programme may be developed in a variety of ways:

(a) making use of "teachable moments" or "opportune events"
(b) integration with other subjects
(c) independent research
(d) a direct outgrowth of pupil-originated and/or teacher-originated questions and discussion.

(If a question is asked privately, it should be answered privately; if in a group, answered with the group.)

When pupils discover that the teacher is willing to answer questions and discuss topics honestly and directly, they may pose a variety of questions and make statements which may form a basis for future study.

I. SUGGESTED DEVELOPMENT

A. Teachable moments or opportune events

1. Any situation in the school environment which leads to a discussion of the use of drugs:

   - why drugs are used
   - who prescribes them
   - how stored, etc.

2. T.V. commercials are quoted by the children.

3. The immunization programme.

4. All drugs are not kept in the medicine cabinet. A news item may open the topic of drug use or the abuse. This may lead to discussion of such drugs as alcohol, tobacco, coffee, etc. and their responsible use.

B. Integration with other subjects

Integration with other subject areas will be mainly in Language Arts, Social Studies, and Science.

It is important that the teacher acquire adequate background knowledge to enable her to provide accurate and factual information when guiding discussion.

Sample questions and content development in possible areas of integration follow:

- the medicine cabinet or drawer is found in most homes. At any level, the child's interest in its contents may be used to initiate a discussion of drugs.

- a leading question such as "Why won't mother let me touch things in the medicine cabinet?" may be used to develop the following ideas:

  1. medicines are drugs
  2. drugs are helpful and necessary
  3. drugs should be used only as directed
  4. misuse of drugs is dangerous

(a) Science:-

An intermediate class studying the (E.S.S.) units on Mystery Powders might branch into a study of drugs.

Precautions relating to safe drug use may lead to a primary discussion of the medicine cabinet. The pupils or the teacher may then pose such questions as:-

1. What are drugs?
2. Why should we know facts about drugs?
3. Are all drugs harmful?
4. Would society be better off without drugs?

(b) Language Arts:-

Studies could be used to promote facets of the Language Arts programme where pupils and teachers through discussion may wish to:-

- make reports from research
- carry on debates
- express opinions regarding aspects of the topics under discussion

(c) Social Studies:-

Opportunities may arise here to emphasize historical, research, economic and legal aspects of drugs.

- Production of drugs and medicines

- Research on the drug industry may be undertaken during a Social Studies unit. A study of Mexico may include investigation of the growing, importing and selling of marijuana.

- Investigation of laws pertaining to the distribution and use of drugs. Canada's Food and Drug Act, Narcotic Control Act, Proprietary or Patent Medicine Act.

C. Independent Research

Resource materials accompanying this guide and information about drugs and drug use provided through the school librarian and/or the district resource centre should be readily available to pupils. Research should also utilize local community resources.

D. Sample Questions or Statements (teacher or pupil originated)

A study of drugs may be initiated by statements or questions such as:

1. "Why won't mother let me touch things in the medicine cabinet, or drawer?"

Information obtained may include:-

(a) the cabinet contains medicines and medicines are drugs
(b) drugs must be used wisely
(c) drugs may be of many types:

    1. pills - (aspirin)
    2. liquid form - (cough syrup)
    3. powders - (bicarbonates)
    4. capsules - (cold capsules)

(d) some drugs are poisonous
(e) how drugs are obtained

    1. prescription
    2. over the counter
    3. patent medicines

(f) Prescriptions

    - what they are
    - who makes up a prescription
    - who prescribes them
    - who takes prescriptions
    - dose
    - how we feel as a result

(g) responsibility of the patient to follow the prescription exactly
(h) types of labels
(i) what is contained on the label
(j) the poison symbol and poison control procedures
(k) the importance of child proof caps on containers
(l) role of the doctor
(m) the importance of the work of the pharmacist (druggist)(Consult the local pharmacist, perhaps invite him to your classroom.)
(n) dangers of self-medication

2. "Why do we get shots?"

Information developed:-

(a) reasons for immunization
(b) types of immunization
(c) diseases controlled by immunization
(d) importance of community health

(e) public health programme

1. clinic
2. public health nurse
3. role of family doctor

More mature pupils may wish to discuss or research the circulation and/or the composition of the blood. See unit on Human Body.

3. "What is wrong with glue sniffing?

Information developed:-

Symptoms and effects:

1. odor on breath or person
2. dizziness
3. slurred speech
4. hallucinations
5. irrational behavior
6. long term harmful effects

The foregoing questions could be developed by senior intermediate students to include questions or statements pertaining to the misuse of

- other volatile substances and
- LSD, Marijuana and other hallucinogenic and psychedelic substances.

4. A pupil might make the statement: "I read in the newspaper that the police arrested thirty drug addicts over the weekend."

The question "What is a drug addict?" or "What is drug dependency?"

Information developed:-

(a) types of addictive drugs
(b) why potentially addictive drugs are sometimes prescribed by doctors.
(c) why some people become addicted to (dependent on) drugs.
(d) the importance of personal responsibility.
(e) why drug addiction costs the community a great deal of money.
(f) why Vancouver has over half the heroin addict population of Canada.
(g) social problems faced by the addict and the community.
(h) the work of organizations in treating and rehabilitating drug addicts -

- Narcotic Addiction Foundation of B.C. treats the addict who wants to be helped.

- The Federal Government maintains a treatment and rehabilitation centre in the Fraser Valley for people who have been convicted of some crime and are also addicts.

NOTE: See Section II on Drug Information following.

ADDITIONAL SAMPLE QUESTIONS

	SUGGESTED VOCABULARY
Who invented drugs?	medicinal plants, herbs, digitalis, foxglove, apothecary, mortar and pestle, Egyptians, potions.
Can drugs be made in laboratories?	synthetic, animal testing, Switzerland, international trial use, Connaught Laboratories (at Willowdale, Ontario).
What is an allergy?	constriction, asthma, hay-fever, histamine, antihistamine, bronchial tubes, bronchioles, sensitivity, mucus membranes, cilia.
What are some of the noticeable effects of "glue sniffing"? . . .	dangers, control, influence, intoxicant, toxic, behaviors, solvents, vapours, habit, craving, odour, staggering gait. Sniffer, pusher, anemia, liver disorder, kidney, brain, paint remover, gasoline, thinner, toluene, solvents, symptoms, chronic, hazards.
How do teenagers get started on drugs?	user, dosage, dependence, rebellion, feelings, pusher, mood, anxiety, sedatives, stimulants, depressants, self-control, withdrawal, tolerance.

Why must a person have a prescription to buy sedatives? . .	self-diagnosis, treatment, Canada's Food & Drug Act.
How do marijuana cigarettes differ from commercially manufactured cigarettes?	distorted, reality, hemp, intoxicant, hallucination, brain, legal.
How do sedatives differ from stimulants?	benzedrine, dexedrine, "bennies", "pep pills", brain, barbiturates, amphetamines.
Which narcotic is most habit-forming?	pain killers, opium, morphine, heroin, cocaine, codeine, marijuana, elated, hilarious, withdrawal, intoxicant, depression.
Why do some people become dependent upon certain drugs? . .	depression, worry, tension, tranquillizers, barbiturates, pheno-barbital, amytal, nembutal, seconal, narcotics, sleeping pills, pain, analgesics, laxatives.
How can a drug addict be treated?	desire, co-operation, assistance, agencies, determination, treatment, withdrawal sickness, narcotics, barbiturates, methadone, self-respect, rehabilitation.
What part does the Federal Government play in the control of narcotics?	controls, importing, manufacturing, processing, registration, addict, addicting, use, Narcotics Act, dependency, inspectors.

II. BASIC INFORMATION

A. GENERAL CLASSIFICATION OF DRUGS

1. Prescription Drugs

These are drugs which cannot be dispensed by a pharmacist without a doctor's prescription. These drugs are then compounded or supplied by a pharmacist exactly as prescribed. Specific dosage directions are given for that person and should be carried out by the person. These drugs are potent and effective and therefore should be used only as directed and not traded between two persons as dire results could occur.

2. O.T.C. (Over-the-Counter) Drugs

These are drugs which may be provided by a pharmacist without a doctor's prescription. The pharmacist will point out the dosage and benefits that should be obtained and also the adverse side effects that can accompany overdosage of that drug, e.g. nausea or drowsiness. These drugs are powerful medications and should be used only according to the label directions.

3. Proprietary or Patent Medicines

These are drugs which the Food and Drug Directorate have felt are not likely to cause any harm and may have a beneficial effect in some minor ailments. These drugs are felt to be suitable for self-medication but not of sufficient danger that the advice of a pharmacist or physician is needed.

B. TYPES OF DRUGS - most commonly used

1. Analgesic (pain-relievers)

Aspirin alone or in combinations with other drugs is commonly used to relieve aches and pains which are usually the result of a stress being placed on various parts of the body. These drugs are of great value when used sensibly but can cause excess stomach acidity or internal bleeding or other adverse effects if taken in large doses or consistently for too long a period of time.

2. Cough Syrups

These are widely used by people today. Some cough syrups will help loosen mucus in the chest and allow a person to breathe more easily whereas others depress the cough reflex

centre in the brain and thus help to eliminate the dry ticklish cough. These same cough syrups, however, may contain antihistamines and other drugs which tend to make a person sleepy and therefore care must be taken if driving a car or operating machinery. This drowsy effect, however, is advantageous if the person taking the cough syrup wishes to sleep.

3. Cold Preparations and Nasal Sprays

These are of value in relieving the symptoms of a cold and like the cough syrup may contain antihistamines and drugs which make the blood vessels narrower - vasoconstricts to relieve a stuffy nose and head. Prolonged use of these products is not to be encouraged because of the drowsiness effect and sometimes too great a vasoconstriction of the membranes of the nose may produce headache and nausea.

4. Laxatives

There are many types of laxatives available. Each type has an effect to alleviate a particular form of constipation, e.g. a bulk producing laxative for constipation due to a lack of sufficient content in the intestine, a stimulant type for constipation due to a lack of mobility of the intestine. The laxatives are not generally beneficially interchangeable because one laxative does not relieve all types of constipation and as a result a guided choice of laxative should be made by the public.

5. Anti-infective Agents

Included in this group of drugs are the antibiotics. These drugs act by killing the organisms (bacteria) which cause illness or by preventing their growth until the body's own resistance factors arise to fight the organisms, thus curing the disease.

6. Sedatives and Tranquillizers

These drugs are used to relieve the tensions and emotional disturbances which are caused by many social and economic factors of the world today. Included also in this group are the preparations which help induce sleep.

7. Diuretics

These drugs aid in the removal of excess fluid from the body tissues and are of great value in the treatment of edema (excess fluid in the tissues) as a result of the kidneys not working properly, and certain heart diseases.

C. PRECAUTIONS TO BE TAKEN WHEN ADMINISTERING OR CONSUMING DRUG PRODUCTS:-

1. Read the label
2. Read the dosage directions carefully and follow them exactly.
3. Don't take drugs in the dark
4. Don't rely on T.V. or radio commercials
5. Don't trade drugs with other persons
6. Consult your pharmacist or physician if any doubt exists.

D. POISONS - All drugs misused can be poisonous

Many medicine chests and cupboards in the home contain agents, such as cleaning fluids, solvents or pesticides which are poisonous if swallowed.

These agents are of value if used in a sensible manner but can cause harmful effects or even fatal results if not treated with respect by all persons in the home.

Poison Control

Accidental poisoning, especially of young children, is a common cause of illness and sometimes death in every part of Canada.

In British Columbia there are at least 300 cases of poisoning each month serious enough to be brought to hospital.

Drugs are the most common agents. (Five deaths in 1968 in B.C. from aspirin poisoning. B.C. Division of Vital Statistics).

The B.C. Poison Control Information and Treatment Service is located in about 45 community hospitals throughout British Columbia and provides:-

(a) information to the public if the doctor cannot be contacted.
(b) information to the physician to assist in the treatment of the patient.

Every B.C. telephone book will shortly list a Poison Control number to call in an emergency, as the new telephone books are issued.

E. STORAGE & HANDLING OF DRUGS & POISONS

1. STORE all drugs in the medicine cabinet or other area out of reach of children.

2. Teach children the hazards of drugs and common household cleaners.

3. Some drugs require refrigeration - read the label.

4. Some drugs bear an expiry date beyond which their potency and effectiveness cannot be guaranteed - read the label.

5. KEEP liquid poisons or pesticides in labelled containers - never in used beverage bottles.

REFERENCE LIST (It is essential for teachers to have current and accurate information on drugs.)

Articles and research findings appear frequently in professional journals and in the popular press. Since bibliographies soon become outdated, the following items are recommended but are neither inclusive nor final.

A. PRESCRIBED TEXTS

See current issue of the Prescribed Textbook List.

B. SUPPLEMENTARY REFERENCES

1. Department of National Health and Welfare, Ottawa 3, Ontario provides a set of reference pamphlets free on application.

2. Pamphlets available free from the local public health office

   - Glue Sniffing
   - LSD - a Drug that Affects the Mind
   - Quackery
   - Keep Them Safe
   - Poisoning
   - Others - as they become available

3. Narcotic Addiction Foundation of B.C. at 2524 Cypress Street, Vancouver 13, provides a set of reference articles free on application on a one per school basis. Articles include:-

   - Dangerous Drugs and Their Effects
   - Glue Sniffing
   - A Short History of Drug Addiction & Treatment in B.C.
   - An Overview of the Drug Scene - (1969)
   - Others - as they become available.

4. Canada, The Commission of Inquiry, Interim Report of the Commission of Inquiry into the Non-Medical Use of Drugs (Queen's Printer, Ottawa).

5. Whitaker: Drugs and the Law: The Canadian Scene (Methuen).

C. AUDIO-VISUAL RESOURCES

Note: The Health Branch Film Library is no longer in a position to supply films and filmstrips to British Columbia schools but will continue to offer advisory services.

1. Film - Drugs and the Nervous System (Churchill Films) - available from Department of Education, Audio-Visual Services Branch, Vancouver.

2. Filmstrips -
   (a) LEARNING ABOUT DRUGS (McGraw-Hill)
   (b) DRUGS IN OUR SOCIETY (Society of Visual Education)
   (c) DRUG MISUSE AND YOUR HEALTH (Society of Visual Education)

3. Representations of the circulatory and nervous systems suitable for young children. See Pages 9 and 10 of Unit on Human Body.

NOTE: Watch for pertinent programmes on radio and television in The Teacher's Bulletin for B.C. School Broadcasts.

D. VARIOUS LOCAL RESOURCES

1. People - pharmacist, physician, public health personnel, probation officer, etc.

2. Reference Sources - public library, school or district resource centre.

3. News media - papers, radio, T.V.

E. Bibliography provided by the Department of Health & Welfare, Ottawa.

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DRUGS: PART II (Drug Information)

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DRUG INFORMATION

A. DRUGS IN GENERAL

1. What are drugs?

DRUGS ARE: substances (other than food) that alter body function. Drugs are substances used to alleviate, cure or prevent sickness, disease or other like conditions or to alleviate, or prevent the symptoms of a sickness or disease.

(a) Drugs may be obtained from natural or artificial sources:-

1. From natural sources (animals and plants) - hormones, including insulin; steroids; antibiotics; narcotics, including codeine and morphine; ergot; digitalis; and reserpine from the Rauwolfia shrub.

the coffee plant, which yields caffeine, a mild stimulant.

2. From artificial sources - all the synthetic compounds, such as antihistamines, aspirin and its combinations, diuretics, barbiturates, and nasal drops.

(b) Natural or artificial substances are defined as drugs when they are used in these ways:

1. To alleviate the symptoms of a disease, or help the body heal itself. Examples: Aspirin to reduce fever or arthritic pain. An antibiotic to inhibit or kill bacteria.

Barbiturates to permit rest and recuperation.

2. To prevent a disease condition or other abnormal body condition. Examples: Reserpine to dilate the smallest arteries or arterioles to reduce pressure, thereby preventing excessively high blood pressure. Penicillin or streptomycin to kill streptococcal infections.

3. To modify body function

   (a) By relieving pain. Examples: Codeine or morphine to depress the central nervous system and the sensation of pain. Aspirin to relieve simple pain.

   (b) By controlling a physiological condition. Example: Anti-perspirants to control perspiration.

   (c) By controlling a pathological condition. Examples: Digitalis to stimulate a weakened heart muscle. Saline solution to restore level of body fluids. Insulin to replace the body's deficiency of this natural hormone and control diabetes.

2. Why are we concerned about the safety of drugs?

Drugs are potent substances that may either help or harm the body.

(a) Too much or too frequent use of a drug can result in undesirable or even harmful side effects. Examples: Aspirin can cause the stomach lining to bleed, or can be fatal, especially to a child, in excessive dosage. Phenacetin may damage the kidneys after prolonged use. Barbiturates can cause stupor and death. Excessive insulin can cause faintness, confusion, and collapse.

(b) Too little of a drug exposes the patient to danger without giving the desired results. Example: An inadequate dose of an anticoagulant may fail to prevent the formation of blood clots, and expose the patient to the risk of bleeding.

(c) Unnecessary use of an antibiotic may sensitize the body to the drug. Example: Penicillin taken unnecessarily, as for a minor cold, may cause an individual to become sensitive to the antibiotic and develop a severe reaction, so that it cannot be used safely in treating a life-threatening infection. (Furthermore, in the presence of the antibiotic given the patient, the infectious bacteria will mutate and become resistant to this antibiotic. The mutated bacteria, in turn, can cause disease in the same person or some other person.

The original antibiotic is no longer effective in combatting the mutated bacteria. The physician may not have another effective antibiotic to use.)

(d) Some drugs that are safe when taken singly (according to directions for use) may be harmful when taken together. Examples: Depressants (barbiturates) used with alcoholic drinks or with alcohol-based solutions may produce stupor and death. Tranquilizers should not be used with any other depressant, including alcohol.

(e) A drug can cause undesirable side effects in the body while it is performing its intended purposes. Examples: Penicillin occasionally causes a painful skin rash or shock as an allergic reaction. Antihistamines frequently cause drowsiness while relieving the symptoms of an allergy or cold.

(f) Drugs which affect the central nervous system are particularly dangerous when carelessly used, because they may create physical or psychological and physical dependence. Amphetamines may produce psychological dependence.

3. How Safe are our drugs?

The Food and Drug Directorate of the Department of National Health and Welfare is a life protection agency of the Federal Government regulating consumer products which are essential to health. Drug and food products and therapeutic devices are life-sustaining consumer products. The Food and Drug Directorate administers:

1. <u>THE FOOD AND DRUGS ACT</u>

   (a) Establishes standards for foods, drugs, cosmetics and medical devices.

   (b) Regulates packaging, labelling and advertising.

   (c) Requires certain controls in the manufacture of drugs, the distribution of samples, and the sale of remedies for certain diseases.

   (d) Can stop clinical trials of new drugs or ban their sale.

   (e) Specifies drugs to be sold only on prescription.

2. <u>THE PROPRIETARY OR PATENT MEDICINE ACT</u> governs the manufacture and sale of remedies that are not defined in any publication of standard preparations.

3. THE NARCOTIC CONTROL ACT forbids traffic in narcotics or the possession, exportation, importation, or cultivation of narcotics by persons other than those authorized under the Act, and provides severe penalties for violations.

4. How are over-the-counter drugs labelled and marketed for safe use?

Drugs that may be used safely for self-treatment can be purchased over-the-counter without a prescription. Information for safe use must appear on the label.

Examples of Over-the-Counter Drugs: milk of magnesia, aspirin, vitamin preparations.

The Food and Drug Act requires that the label of over-the-counter (o-t-c) drugs include:

(a) Name and address of the manufacturer, packer, or distributor.

(b) An accurate statement of the net amount of the drug in the package.

(c) A list of the ingredients that will have the intended effect (the "active ingredients"), using the established name* of each actice ingredient. The list of ingredients must include the quantity, kind, and proportion of any alcohol and other named substances.

(d) Directions to help the consumer use the drug safely and for the intended purpose.

1. Quantity and frequency of dose
2. Suggested time of use (for example, after meals) and duration of use.
3. Preparation for use (for example, shaking or diluting).

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* These drugs are standardized and described in Canadian, British and U.S. standard references. DRUGS KNOWN AS PATENT MEDICINES - or PROPRIETARY DRUGS - may also be bought over-the-counter. They are considered to be relatively harmless so that the advice of a physician or pharmacist is not required. Examples are Buckleys cough mixture; Murine; Carters Little Liver Pills; ANACIN. The ingredients do not have to be listed on the label.

(e) Adequate warnings, when necessary, for the protection of users, for example:

"WARNING - Do not use when abdominal pain, nausea, or vomiting are present" is required on the label of certain laxatives.

5. How must R_x Drugs be labelled?

Drugs that require medical supervision for safe use may be purchased only with a physician's prescription.

CANADA'S FOOD AND DRUG ACT requires the prescription drug *(R_x) package to contain adequate information:

Labels on drugs purchased by the consumer with a prescription at the drugstore or pharmacy must include:

(a) Name and address of the pharmacy.

(b) Prescription number assigned by the pharmacist.

(c) Date of writing or of original filling of the prescription for the patient.

(d) Name of prescribing physician.

Additional label information on prescription drugs, when directed by the physician, usually includes:

(a) Name of the patient for whom prescription is written.

(b) Complete directions for use.

(c) The name of the drug and potency of each dose.

(d) Instructions for refills, preparations for use such as shaking or diluting, or storage instructions.

6. Who is responsible for the safety of drugs?

The Food and Drug Act is the major law controlling the safety and effectiveness of drugs. It contains provisions requiring the approval of all new drugs, recall of unsafe drugs from the market and inspection of drug manufacturing plants and practices.

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* R_x comes from the Latin word "recipe" meaning "take" and is a symbol for the word "prescription".

Because of the Acts (and Regulations) the physician knows the medication he prescribes is reliable and can be used safely and efficiently by his patients. The consumer knows he can choose a product over-the-counter and use it safely if he follows the label instructions.

An ACT is a Law Passed by Parliament and can only be changed by Parliament.

REGULATIONS provide for the operational details of the Act. They are passed by the cabinet through Orders-in-Council and can be changed by further Orders-in-Council. Every Regulation must be supported by the Act.

INSPECTORS carry out the Provisions of the Act and are based in the various regions and centres throughout Canada. They are employed by the Government of Canada.

B. DRUGS AFFECTING THE NERVOUS SYSTEM

1. What are the medical uses for central nervous system drugs?

Physicians use central nervous system drugs to treat physical and mental disorders. These drugs may change a person's mood and behavior.

Three classes of drugs are used to treat disorders of the central nervous system - stimulants, depressants, and narcotics. Hallucinogens, another class, are presently under study for their possible benefit in certain disorders. All four classes are capable of causing changes in a person's mood and behavior.

(a) STIMULANTS

Stimulants are drugs which directly stimulate the central nervous system and produce a feeling of excitement, alertness, and increased activity. Stimulants are legally available only on prescription from a physician.

1. Amphetamine derivatives are synthetic stimulants which are more potent than the mild caffeine that occurs naturally in coffee and tea. The amphetamines, often called "pep pills", elevate mood and give a feeling of well-being. The names of some amphetamines are:

Generic name	trade names	Slang name
amphetamine sulfate	Benzedrine	"bennies"

Generic name	trade name	Slang name
dextroamphetamine sulfate	Dexedrine	"dexies"
methamphetamine	Methedrine	"crystal", "speed"

Medical uses of amphetamines:

-- to relieve mild depressions due to grief, senility, or convalescence

-- to relieve excessive drowsiness caused by sedatives

-- to treat mild mental disorders, Parkinson's disease, and narcolepsy

-- to control appetite to control weight

2. Phenmetrazine (Preludin) is another stimulant which is similar to the amphetamines in its effect on the central nervous system. It is used to control appetite.

(b) DEPRESSANTS

Depressants are drugs which have a depressant effect on the central nervous system to calm activity and excitement, and to promote sleep. Depressants are legally available only on prescription from a physician.

1. Barbiturate derivatives (from barbituric acid) are synthetic depressants which sedate and permit rest and sleep. Used in low dosage they produce a calm quiet mood. They make up one group of "sleeping pills". Some of the most commonly used barbiturates are:

Generic name	trade name	Slang name
phenobarbital	(in many combinations)	"goofballs"
pentobarbital	Nembutal	"yellow jackets"
amobarbital	Amytal	"blue devils"
secobarbital	Seconal	"red birds", "red devils"

Medical uses of barbiturates:

-- to quiet nervous excitement, sedate

-- to produce restful sleep, control insomnia

-- to treat mental and emotional disorders, epilepsy, and hyperthyroidism

-- to control high blood pressure

-- to aid before and during surgery

2. Other depressants which are very similar to the barbiturates in their effect on the central nervous system and which have similar medical uses are:

Generic name	trade name	slang name
glutethimide	Doriden	"Mickey Finn" (when given in an alcoholic beverage)
ethchlorvynol	Placidyl	
ethinamate	Valmid	
methyprylon	Noludar	
chloral hydrate	Nôctec	
	Dormal	

3. Tranquilizers are mild depressants which relieve mental tension and anxiety without producing sleep or seriously affecting mental and physical capacity. Names of some tranquilizers are:

Generic name	trade name
meprobamate	Miltown, Equanil
chlordiazepoxide	Librium
diazepam	Valium

Medical uses of tranquilizers:

-- to relieve mental tension and anxiety

-- to relax muscles

-- to produce a calm outlook on life (i.e., before surgery, during a family crisis, or in senility when nervous tension and increasing blood pressure need control)

(c) HALLUCINOGENS

Hallucinogens are not currently used as therapeutic drugs and are not legally available except for carefully controlled research projects. Hallucinogens may produce illusions of place and time, distort the qualities of objects, or make unreal objects and experiences seem real.

1. Some of the hallucinogens are:

Generic name	slang name
LSD-25, d-lysergic acid diethylamide tartrate (synthesized from lysergic acid present in ergot, a fungus)	"acid"

Generic name	slang name
DMT, dimethyltryptamine (found in seeds of certain Central and South American plants)	"acid"
mescaline (found in mescal buttons of the peyote cactus)	"cactus"
psilocybin (a substance in Mexican mushrooms)	
psilocyn (also in Mexican mushrooms)	
marijuana (found in the leaves and flowering tops of Cannabis) (See (d) "Narcotics", on the following page)	"grass", "pot"
DOM ("STP") 4-methyl-2,5- (dimethoxamphetamine)	

Medical uses of hallucinogens:

Several Government agencies and about 50 research teams are studying the effect of hallucinogens on the body and exploring their use in the treatment of some forms of mental disorders. LSD may possibly prove useful in alleviating the fears and pains of terminal cancer patients, and in the treatment of alcoholism.

(d) NARCOTICS

Narcotics are drugs which produce sleep or stupor and also relieve pain.

1. Legally defined, a narcotic is any drug which is on the prescribed list, e.g. Heroin, morphine, codeine (not necessarily drugs derived from the opium poppy).

2. Narcotics used as therapeutic drugs (to relieve pain) must conform to the requirements of the Narcotic Act, and are enforced by the R.C.M.P. in co-operation with municipal police forces.

3. Drug preparations containing narcotics are available only on the prescription of a physician. The one exception to this is the drug codeine when used in small amounts combined with two or more other drugs (e.g. Frossts Tablets #222).

2. Why do people abuse central nervous system drugs?

Individuals who do not know the dangers of unsupervised use of central nervous system drugs take them unwisely for a variety of reasons.

The stimulants and depressants have legitimate medical uses, as outlined in previous pages. But even when they are being used under the supervision of a physician, they have the capacity to change the mood and behavior of the user. When they are misused through self-medication, this capacity may create problems.

The hallucinogens (and narcotics) also have the capacity to change the mood and behavior of the user. Therefore, these classes of drugs have a great potential for abuse.

Some persons who seek a change in mood or behavior turn to these drugs as a way to achieve the change. They withdraw into a world where some of their needs are satisfied only by drugs. Participating in the normal activities of family, classroom, and job becomes difficult for the drug abuser. The family, and other groups may suffer from the loss of participation of this individual. The drug abuser may believe he no longer needs these groups, even though he often becomes more and more dependent on the help of others.

The following chart outlines some of the psychological and social reasons for which stimulants, depressants, and hallucinogens have been unwisely used.

Reasons for unwise use of central nervous system drugs

	Psychological	Social
Stimulants e.g.: amphetamines	To combat fatigue	To be artificially stimulated in social activities or sports
	To postpone needed sleep	To rebel against parents, school or adult authority,
	To give false courage	To be like others in the group.
	To remove boredom	
	To be "high" (euphoric)	

Depressants, e.g.: barbiturates	To dull the senses To remove unpleasant feelings To relieve normal anxiety or tension To "come down from a high"	To "get away from it all" To rebel against parents, school, or society To remove the normal frustrations of daily life
Narcotics, e.g.: Heroin	To intense euphoria To dull tension and anxiety	To ease fears To relieve worry resulting from inactivity bordering on stupor
Hallucinogens, e.g.: LSD	To give a feeling of invulnerability To push back reality To experience weird images To stimulate creativity without effort To fulfil curiosity To experience religion through a drug To dissolve the boundary between self and others To do something daring	To be like others in the group To rebel against parents, school, or society

3. Volatile toxic solvents

Glue, gasoline, nail polish remover, lacquer, and innumerable similar substances available to the general public affect the central nervous system causing mild to severe symptoms of intoxication, depending on the susceptibility of the individual and the volume of fumes inhaled. In extreme cases, however, delirium, coma, seizures or death may occur.

THERE ARE NO MEDICAL USES

C. RESEARCH AND MANUFACTURE OF DRUGS

In Canada the Connaught Medical Research Laboratories at Willowdale, Ontario, is the only non-profit manufacturing and research organization in North America. The money over and above costs of production is turned back into research.

Most of or almost all the agents used in immunization programmes are researched and produced by Connaught, such as diphtheria and tetanus toxoids, polio vaccine, cholera, typhoid, measles vaccine and smallpox vaccine. The Connaught Laboratories have been asked to supply vaccine and to assist other biological laboratories in the current World Health Organization's eradication programme for smallpox. Insulin is produced at Connaught also and penicillin as well as many other products. Connaught Laboratories form a division of the University of Toronto.

Many countries produce drugs. Among them West Germany and Switzerland are active in research and the U.S.A. in the production and development of drugs.

ALCOHOL

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ALCOHOL

Introduction

This guide is designed to meet the urgent needs for information about and guidance concerning the use of alcohol. The suggested guidelines will give direction to school boards, administrators, teachers and school personnel in the development of this programme. It is realized that no one programme can meet the needs of all people in all areas. This programme should be used as a flexible tool to stimulate the creative thinking and abilities of teachers and enable them to adopt parts of the programme which are best suited for their particular class, school or community.

Successful Implementation of this programme demands that:

1. The home, the school and the community share responsibility in this area of education.

2. This guide be studied in its entirety before attempting to implement individual sections.

3. Teachers have current and accurate information regarding:

   (a) types and uses of alcohol
   (b) problems of intoxication and alcoholism
   (c) effects of alcohol

4. Teachers be prepared to discuss questions which may arise in the school environment.

5. Teachers provide effective leadership in guiding students to make decisions.

OBJECTIVES

1. To help the child acquire accurate basic information about alcohol.

2. To help the child develop and understanding that if alcohol is used there must be an acceptance of responsibility.

3. To help the child understand the reasons for, and harmful effects of, alcohol abuse.

4. To help the child acquire knowledge of laws and regulations concerning alcohol.

BASIC CONCEPTS

1. Responsibility in the use of alcohol is essential to the well-being of society.

2. The abuse of alcohol is detrimental to the individual and society.

RATIONALE

We live in a society in which cultural attitudes toward the use of alcohol are strong. The aim of this programme is to help young people understand a society in which alcohol use is widely accepted.

It is not the role of a public educational system to tell the child how all families must behave nor what he must accept or reject from his own family. Therefore the school does not offer judgements or define rules of behaviour in respect to alcohol.

PRESENTATION OF CONTENT

It is not the intention of this guide to have this programme on alcohol taught in isolation, nor is it possible to clearly outline a sequential content of competence and knowledge for each level of the elementary school. The depth and breadth to which topics are studied will depend upon the time, place, interests, and maturity of the pupils. The community needs, as dictated by the local environment, will also affect the content presented.

The alcohol programme may be developed in a variety of ways, such as:

(a) making use of "teachable moments" or "opportune events",
(b) integration with other subjects,
(c) independent research,
(d) a direct outgrowth of pupil-originated and/or teacher-originated questions as discussion (if a question is asked privately, it should be answered privately; if in a group, answered with the group).

It is important that pupils have a fundamental knowledge of the various body systems (nervous, circulatory, etc.) affected by alcohol.

See unit on Human Body.

SUGGESTED DEVELOPMENT

A. Teachable moments or opportune events

1. A child relates an incident involving the use of alcoholic beverage in his home or in the community. Children will exchange stories of similar experiences.

   Under the guidance of the teacher, questions such as:

   - "Why do people get drunk?"
   - "What is happening to a person who is drunk?"

   will develop into a discussion of alcohol as a drug and its effects on the human body

2. A situation arises in the school environment leading to a discussion of the use of alcohol.

   - How alcohol is used, e.g. - in industry, in medicine, as a beverage.

3. A news item or advertisement may open the topic of alcohol use or abuse. This may lead to a discussion of personal responsibility and drinking in relation to the law.

B. Integration with other subjects

Integration with other subject areas will be mainly in Language Arts, Social Studies, Physical Education, and possibly Science in such units as the E.E.S. Kitchen Physics.

Content development in possible areas of integration follow:

(i) Language Arts

Studies could be used to promote facets of the Language Arts programme where pupils (depending on maturity) and teachers may:

(a) make reports from research,
(b) carry on debates and express opinions,
(c) examine and discuss newspaper and magazine articles, etc.

(ii) Social Studies

Opportunities may arise here to emphasize historical, research, economic and legal aspects of alcohol.

Research on the alcohol industry may be undertaken during a Social Studies unit. A study of ancient peoples may include investigations of the discovery of alcoholic drinks, the fermentation process and how fermented juices -- especially wine -- became a part of many religious ceremonies.

Investigate laws pertaining to the distribution and use of alcohol.

(iii) Physical Education

Opportunities may arise here to emphasize:

(a) how alcohol affects the brain, impairing judgement and control,
(b) how behavioral changes cause accidents.

C. Independent Research

Research may include local community resources, e.g. - Social worker, Alcoholic Foundation, Alcoholics Anonymous, Alanon, Alateens.

The pupils may prepare a plan for individual or group research on such topics as:

(a) Alcohol and young people,
(b) Alcohol and traffic accidents,
(c) Alcohol and the body,
(d) Alcohol and the law,
(e) Alcohol -- kinds of; in industry, in hospitals, etc.

ALCOHOL - COMMON TYPES AND MIXTURES

There are many different alcohols and many different products are made from them.

Ethyl alcohol is made from fermented fruits and cereals and is the alcohol used in beverages.

Methyl alcohol, sometimes called wood alcohol, is now made synthetically but formerely was a distillation of wood chips and is a poison which has a delayed action of 12- 36 hours. It can cause blindness. The fatal dose can be as little as 2 teaspoons, but more usually is from 2 to 6 ounces. Methyl alcohol is used in paint thinners, canned heat and industry.

Isopropyl alcohol, a by-product of the oil industry is a poison and should not be used internally. It is used in industry and in hospitals and clinic centres. Very small amounts may be used in flavorings for cooking.

Bay rum is a preparation of ethyl alcohol, aromatic oils, water and some other substances, one of which is liquid soap. It is used as an after-shave lotion.

Rubbing alcohol has ethyl alcohol, water and certain other substances added to make it taste bitter and to cause vomiting. Rubbing alcohol is used externally for the care of the skin.

Vanilla flavoring of the natural variety contains ethyl alcohol, but the artificial variety does not.

ALCOHOL - FACT SHEET

I WHAT IS ALCOHOL?

1. Alcohol is a colorless fluid, with a mild odor and burning taste. It is a drug.

2. Wherever there is interaction with water, sugar and yeast, and a mild degree of warmth, ethyl alcohol is produced. (The sugar may be in fruits and vegetables and in cereals.)

3. Alcoholic beverages contain ethyl alcohol. Usually the term "alcohol" means "alcoholic beverages".

4. Alcoholic beverages have been known for their special effects long before the beginnings of written history.

5. Different countries have developed their own alcoholic beverages such as wine in grape growing countries, and beer in grain growing countries. Alcoholic beverages are made (usually) from fruits or cereals and contain ethyl alcohol as the chief ingredient, wines from 10 - 14%, beer from 4 - 10%. The other ingredients are non-alcoholic adding color, flavor, aroma, palatability and other factors.

6. Many hundreds of years ago man learned how to make wine and beer stronger (to increase the amount and percentage of alcohol in them) by a process called distillation. Distillation is the process of cooking or boiling the materials resulting from fermentation and collecting the condensed vapor. The liquid obtained could be brandy or whiskey, or rum, or gin, etc., depending on what fruits or cereals were used in the first place and what flavorings were added.

7. A bottle of beer has approximately as much alcohol in it as a 1.5 oz. drink of whiskey, gin, vodka, or rum. Four bottles of beer are aprroximately the equivalent of four drinks of whiskey.

8. In British Columbia all wines, beers and distilled drinks are bought and sold by licensed outlets which obtain their stocks through the government controlled Liquor Control Board. People may make their own wine and beer provided they do not sell them.

II HOW DOES ALCOHOL AFFECT THE HUMAN ORGANISM?

1. The intoxicating effect of alcohol is due to a special sensitivity of brain cells to alcohol. Their function is altered or depressed only as long as the alcohol is present, however, in some cases, irreversible damage occurs. By depressing nerve action, alcohol relaxes the mind and often increases gaiety and sometimes belligerence.

2. Since alcohol partly paralyzes the brain cells, it retards or slows muscle reaction time, seeing, hearing and judgment. The degree of inefficiency may be slight and may show up in such activities as target practice, typing, handwriting, driving, etc. It might be obvious with slurred speech and unsteady walk, ("Blacking-out" is a memory blank-out and can happen during a bout of heavy drinking.) If the person has taken many drinks, he may have a temporary paralysis of all his voluntary muscles. This stage if often called "passing out" and can happen to an inexperienced drinker as well as to a heavy drinker.

3. A person is described as impaired, intoxicated, inebriated, drunk, tipsy, tight, when enough alcohol has reached the brain cells to interfere with their efficiency. The degree of inefficiency is dependent on how much alcohol is circulating in the blood. This amount is known as the blood alcohol level.

4. Absorption and Distribution of Alcohol

   Alcohol is not changed chemically in the stomach and intestines. It is ready for absorption into the blood stream the moment it is ingested. A little of the absorption of alcohol occurs in the stomach, but most of it takes place in the first foot of the small intestine. A large volume of food and water in the stomach, as well as other factors which delay emptying time of the stomach, will somewhat prolong the absorption period.

5. The Function of the Liver with Alcohol

   The liver is the only organ in the body that can oxidize (or break down alcohol into carbon dioxide and water with the production of calories). The liver oxidizes at least 90% of the ingested alcohol at a rate roughly proportional to body weight. For a 150 lb. individual the liver can oxidize alcohol at approximately 1/3 oz. per hour, so that 5 to 6 hours must pass before the alcohol in 4 oz. of whiskey or 1¼ qts. of beer

would completely pass out of his body. As the liver processes the alcohol the circulating blood has proportionately less alcohol in it. It is the unchanged alcohol in the continuously circulating blood that causes the intoxicating effect on the brain cells.

About 2% to 4% of alcohol escapes oxidation and is excreted unchanged in the urine. Another 2% to 4% escapes oxidation through elimination in the expired air from the lungs. Another 1% - 2% may be excreted in perspiration.

In summary, the body becomes free of alcohol by the following processes:

(i) At least 90% is oxidized in the liver;
(ii) 2% to 4% is excreted in the urine;
(iii) 2% to 4% is excreted in the expired air;
(iv) About 1 to 2% is excreted in perspiration

6. The Hangover

The hangover is a common, unpleasant, but rarely dangerous, after-effect of overindulgence occuring in the moderate drinker who occasionally takes too much, and in the excessive drinker after a prolonged drinking bout. The exact mechanism is unknown. The symptoms are usually most severe many hours after the peak of the drinking bout, when little or no alcohol can be detected in the body. Although a hangover has been blamed on mixing drinks, it can be produced by any alcoholic beverage alone, or by pure alcohol. There is inadequate evidence to support beliefs that it is caused by vitamin deficiencies, dehydration, fusel oils or any other non-alcoholic components.

7. Why Drinkers Vary in Reaction to Equal Amounts of Alcohol

The larger the person, the greater the volume of blood and cells he will have and consequently the more diluted (or weaker) the alcohol throughout his body, including the nervous system. In other words, the greater the body weight of an individual, the lower will be the blood-alcohol concentration resulting from ingestion of a standard amount of alcohol. The blood-alcohol level produced in a 180-pound man comsuming four ounces of distilled spirits,for example, will generally be substantially lower than that occurring when the same amount is taken by a 130-pound man in the same length of time.

Tolerance is biochemical resistance to the paralyzing and irritating effects of alcohol. As some persons have more tolerance to sunshine, caffeine, etc., so do some have more tolerance to alcohol than others.

8. Alcohol as a Food

The oxidation of 1 gram of alcohol yields 7 calories, compared to 4 calories from carbohydrate or protein, and 9 calories from fat. Its intermediate breakdown products seem to be utilized by various organs in maintaining functions. Despite the fact that the body to some extent uses alcohol as a food, alcohol cannot be considered as a complete or nutritious food since it does not contain amino acids, minerals or vitamins.

9. Alcohol can be a Poison

Alcohol can be hazardous even in moderation. Quantities insufficient to inebriate, may interact dangerously with defective hearts, infected livers, unstable blood-sugar levels, latent epilepsy, and barbiturate medication.

III The Abstainer, the Moderate Drinker, the Pre-Alcoholic, the Alcoholic

1. The abstainer does not drink alcohol at all. He chooses not to drink for personal, health, athletic, or religious reasons, or he may dislike the taste and the effect of alcohol.

2. The moderate drinker drinks alcohol at reasonable intervals, never using it to blot out reality or as an intoxicant. His drinking does not interfere with health, his family, his work, or his community life.

3. The pre-alcoholic drinker may have the familiar signs of needing a drink before facing certain situations solitary drinking, frequent drinking, frequent disputes about drinking, Monday morning absenteeism, etc., but he may have only a steady increase in intake.

The point at which manageable drinking stops and problem drinking begins is hard to define and varies with each individual.

4. The alcoholic is a person who continues to drink even though his drinking consistently causes physical illness, or consistently causes trouble in his family, at work, or in the community. The alcoholic is a drug addict, addicted to ethyl alcohol, but commonly not thought of as a drug addict.

IV. HELP FOR THE ALCOHOLIC IN B.C.

1. Alcoholic Anonymous A.A.

- is an international fellowship of men and women with groups in every city and town of Canada, United States and many other countries. The only requirement for membership is an honest desire to stop drinking. By sharing their common problem of alcoholism and by working actively with other alcoholics they are able to abstain completely from alcohol. There are no dues, no fees, (but voluntary contributions) no alliance with any political, religious or racial groups, or with other agencies. Alcoholics Anonymous members may avoid publicity and use first names only. It may be contacted by telephone as the agency is listed in every phone book in B.C.

- Al-Anon is an international organization of wives, husbands, parents and friends of alcoholics. The organization aids its members through mutual support. It publishes books and pamphlets on alcoholism and how to live with those who have this disease. New members are always welcomed. It may be reached through Alcoholics Anonymous in the phone book, or by word of mouth.

- Al-Teen is similar to Al-Anon but its membership is restricted to the teenaged children of alcoholics. It also may be reached through Alcoholics Anonymous.

2. Alcoholism Foundation of British Columbia

- with stationary clinics in Vancouver, Victoria, Kamloops, Prince George and two travelling clinics on Vancouver Island and the Okanagan, is a professional agency organized to treat alcoholism as an illness and the alcoholic as a sick person, and to carry out programmes of prevention and research. The chief source of funds is the Government of B.C.

3. Alcohol Education and Research Council of British Columbia

- is a professional agency situated in Vancouver organized to provide discussion leaders, visual aids, pamphlets, etc. to the public, particularly to secondary students and youth organizations. It is also financed partly by Provincial grants.

4. The Salvation Army

   - a religious denomination, has a well-known rehabilitation programme for the alcoholic. The residential help is offered through Harbor Light Centres, and its well-known rehabilitation camp is at Miracle Valley near Mission City, B.C.

5. The Provincial Government maintains a treatment and rehabilitation minimal security jail for problem drinkers, at Alouette River near Haney.

D. SAMPLE QUESTIONS OR STATEMENTS (teacher or pupil originated)

In a classroom where a warm, secure and comfortable feeling exists between pupils and teacher, pupils may ask questions or make statements which initiate discussion.

Such statement or questions as: "I had a drink of wine with my dinner" or "Why do people get drunk?" will produce immediate and varied reactions from the other pupils. The teacher's skill in leading discussion in an unbiased manner is of the utmost importance.

Depth of discussion will be determined by the interest, background and experience, and maturity of the group.

1. "I had a drink of wine with my dinner."

   Discussion may include:-

   (a) use of alcoholic beverages
       - differences in family beliefs
       - cultural and religious differences
       - tolerance of the beliefs of others

   (b) laws regarding under-age drinking

2. "Why do people get drunk?"

   Information obtained by discussion may include:-

   (a) meaning of drunk (intoxicated)
   (b) alcohol can cause intoxication (effect on brain)
   (c) names of alcoholic beverages
   (d) types and uses of alcohol
   (e) how alcohol is made

3. "I am eleven years old. Why can't I drink?"

   Discussion may include:-

   (a) symptoms and effects of drinking alcohol
   (b) laws as they affect the juvenile
   (c) alcohol and accidents
   (d) body tolerance to alcohol
   (e) the decision to use or not to use alcohol

4. Is it true that "once an alcoholic, always an alcoholic?"

Discussion may include:-

(a) what is an alcoholic?
(b) social drinking
(c) excessive use of alcohol impairs the function of the central nervous system which controls all other body systems e.g. respiratory and circulatory systems.
(d) delirium tremens
(e) treatment of alcoholism -- alcoholics
(f) Alcoholic Foundations, Alcohol Research and Education Council
(g) Alcoholics Anonymous, etc.

ADDITIONAL SAMPLE QUESTIONS OR STATEMENTS

	Suggested Vocabulary
What is alcohol?	drug, ferment, yeast, grain, distillation, fruit, sugar, alcoholic beverage, methyl, ethyl.
How much do you have to drink to get drunk?	alcoholic content, individual differences, emotional stability, tension, liver, anxiety, tolerance, security, uneasiness.
"We were stopped in a road block New Year's Eve."	police, drinking driver, breathalyzer, accident, fines, impaired driving, drunk, reaction time, loss of judgement, prevention.
How is alcohol produced?	ferment, yeast, ethyl, grain, beer, wine, liquor, alcoholic beverages, industry, lacquers, lotions, drugs, perfumes, dyes, distillation, proof.
Some people become alcoholics.	illness, alcoholic, drunkenness, characteristics, psychological, adjustments, problems, difficulties, reactions, intoxicated, discomfort.
Is alcoholism a disease?	cirrhosis, calories, illness, diet, dehydration, vitamin, carbohydrate.

	Suggested Vocabulary
How do young people get started on alcohol?	experiment, ignorant, immature, control, excitement, minors, laws, excessive, accidents, individual, society, decisions, adulthood.
Is alcohol a stimulant or a depressant?	drug, classification, stimulant, depressant, nervous system, functions, drowsy, senses, blood, liver, oxidized, breath, kidneys, glands, fatigue.
Alcohol affects the brain.	deterioration, brain, nerves, tissues, mental, toxic, deficiency, confusion, hallucinations, visual, memory, psychotherapy, diet, vitamin, inhibitions, controls, antisocial, hostile, aggressive.
Is there a difference between a "drunk" and an alcoholic?	habitual, drinkers, social, tolerance, danger, tissues, amounts, content, limits, blood, breath, addict, alcoholism, excessive, dependency, pain, nausea, vomiting, headache, high.
Alcohol can change behaviour.	effects, sedative, brain, inhibitions, education, training, insecurity, resentment self-pity, environment, excessive, personality.
How does alcohol lower driving ability?	driver, security, false feelings, drunken, bullheaded, hostile, reaction, brakes, collision, danger, signals.
Can the alcoholic be helped to stop drinking?	organization, acknowledge, help, meetings, alcoholics, social discussions, encouragement, admit, realization, programme, co-operation, support, attendance, agencies.

RESOURCES FOR ALCOHOL UNIT FOR ELEMENTARY SCHOOL

(It is essential for teachers to have current information on alcohol)

Articles and research findings appear frequently in professional journals and in the popular press. Since bibliographies soon become outdated, the following items are recommended but are neither inclusive nor final.

A. Prescribed Texts

See current issue of the Prescribed Textbook List

B. Supplementary References

1. McCarthy: Alcohol Education for Classroom and Community (McGraw-Hill)

2. Alcoholism Foundation of B.C., 175 West Broadway, Vancouver 10, B.C. provides free a series of pamphlets for reference as -

   (a) Ethyl Alcohol,
   (b) A Guide to Moderation in Drinking and Abstaining,
   (c) Why Do People Drink?

3. Department of National Health and Welfare, Ottawa 3, Ontario provides a set of reference pamphlets on application.

C. Audio-Visual Resources

1. Film - Drugs and the Nervous System
   - Alcohol in the Human Body - Finland-English version.
   - To Your Health

   (These three films are available from the Audio-Visual Branch of the Department (Office in Vancouver)

2. Filmstrips - Learning Abouts Drugs (McGraw-Hill)
   - Drugs in our Society (Society of Visual Education)
   - Drug Misuse and Your Health (Society of Visual Education)

3. Representations of the circulatory and nervous systems suitable for young children.

NOTE: Watch for pertinent programmes on radio and television in The Teacher's Bulletin for B.C. School Broadcasts.

D. Various Local Resources

1. People - pharmacist, physician, public health personnel, probation officer, etc.

2. Reference Sources - public library, school or district resource centre.

3. News media - papers, radio, T.V.

TOBACCO

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TOBACCO

INTRODUCTION

Successful implementation of this unit demands that:

1. The school, the home, and the community share responsibility in this area of education.

2. This guide be studied in its entirety before attempting to implementing individual sections.

3. Teachers have current and accurate information regarding:

   (a) types and uses of tobacco
   (b) health hazards of smoking

4. Teachers be prepared to discuss questions which may arise in the school environment.

OBJECTIVES

1. To help the child acquire accurate basic information about tobacco.

2. To help the child understand, why people smoke or do not smoke.

3. To help the child arrive at his own decision regarding smoking.

4. To help the child understand the social, cultural, economic and safety aspects of smoking.

BASIC CONCEPT

Smoking is a serious hazard to health.

PRESENTATION OF CONTENT

This guide does not outline the content for each grade in sequence as the subject matter is intended to be integrated with other facets of the curriculum. The depth and breadth to which topics are studied will depend upon the time, place, interest, and maturity of the pupils.

The tobacco unit may be developed in a variety of ways:

(a) use of "teachable moments" or "opportune events"
(b) integration with other subjects
(c) independent research
(d) group activities

(e) a direct outgrowth of pupil-originated and/or teacher-originated questions and discussion.

It is vital for pupils to have a knowledge of the respiratory and circulatory systems affected by tobacco. See unit on Human Body.

SUGGESTED DEVELOPMENT

A. Teachable moments or opportune events

1. News items; advertisements or discussion of T.V. commercials.

2. Situations that arise in the home
   e.g. - smoking in bed
   - experimenting with parents' cigarettes

3. Situations that arise in the school environment
   e.g. - smoking on playground, in washrooms, to and from school

B. Integration with other subjects

1. Social Studies

Opportunities arise here to emphasize historical, economic and legal aspects of tobacco.
Research on the tobacco industry may be undertaken during a Social Studies unit on the Americas.
Studies may include:-

(a) early smoking habits of Indians
(b) introduction of tobacco to Europeans in America
(c) major tobacco-growing areas (Ontario),
(d) the growing of tobacco and its manufacture into various products
(e) economic significance of tobacco.
(f) knowledge of legislation, including laws regarding smoking in public places.
(g) sale of tobacco products to minors.

2. Language Arts

(a) student research
(b) debates
(c) "buzz" sessions
(d) examination and discussion of newspaper and magazine articles, advertising, T.V. commercials, etc.
(e) creative writing - e.g. essays, poetry
(f) dramatization

3. Physical Education

(a) effects of smoking on athletic ability

4. Science

An intermediate class studying such units as the (E.S.S.) Small Things and the (E.S.S.) Gases and Airs might branch into a study of tobacco. An optional unit on pollution could include the effectiveness of filters and the chemical composition of cigarette smoke.

In simple experiments and Science Fairs pupils can demonstrate the effectiveness of filters on tars in cigarettes. The tar retention in the lungs of persons who inhale cigarette smoke can also be demonstrated.

5. Mathematics

(a) a study of the expenditures and profits of the tobacco industry can be used to lead to the preparation of charts, graphs, tables.

(b) the economic cost of smoking over a long period of time to the consumer.

6. Art

(a) posters
(b) cartoons
(c) displays, charts, graphs.

C. Independent Research

1. Historical background

2. Economics
   (a) where tobacco is grown
   (b) importance of industry
   (c) legitimate uses e.g. - pesticides
   (present research indicates no medical uses for tobacco)

3. Surveys
   (a) smoking habits
   - modern knowledge based on scientific research.
   - many parents acquired the habit when little was known of dangers.

   (b) tobacco sales
   - money spent on research by the government and the tobacco industry.

D. Group Activities

1. Science projects
   e.g. - studying tar contents; filters, etc.

2. Charts, posters and booklets

3. Study of pollution

4. Articles in school newspaper

5. Seminars; panel discussions based on advertisements, etc.

6. Role playing

7. Critical study of tobacco commercials and advertising

8. Make films, filmstrips, tapes.

E. Sample Questions (teacher or pupil originated)

A study of tobacco may be initiated by such questions as:

1. What effects does smoking have?

   Information obtained by discussion and research may include

   (a) When tobacco is smoked what really happens
   - to respiratory system
   - to circulatory system
   - to nervous system

   (b) Effects of smoking
   - damage to health (nicotine, tobacco tar)
   - bad taste in mouth
   - sluggish feeling
   - discolored fingers and teeth

   (c) possible habit-forming properties of tobacco because it is a drug

   (d) growth and manufacture of tobacco

   (e) types of manufactured tobacco

2. "Where have you seen this sign?"

   | NO SMOKING |

   (Teacher originated)

Discussion should include:

(a) reason for posting sign:
- explosive materials (service stations, etc.)
- fire hazards in public areas

(b) fire hazards in the home

ADDITIONAL SAMPLE QUESTIONS

	Suggested Vocabulary
Why do people start smoking?	attitudes, habits, influence, parents, environment, acquired, accepted, conformity, status, importance, symbol, popularity, accomplishment, dizziness, nausea, expensive, tendency, relaxation, craving, mechanical, irritates.
Why are athletes told to refrain from smoking?	sports, athletes, physical condition, breath, lungs, heart, strain, training.
What can we do about smoking?	personal, manufacturers, hazards, research, health, nation, educational, programme, habit, laws, restricting, sale, enforced, social, acceptance, tax, discourage, insurance, nonsmokers, warnings, labels, dangerous, serious.
Can people really stop smoking?	motivation, reason, will, peer, quit, habit, advantage, routine, decision, success, desire, intentions, friends, goal.
Why is there so much concern about teen-age smoking?	statistics, heavy, inhales, ill, early, age, habit, conformity, status.
Do cigarettes really have an immediate effect on your health?	breath, short, irritate, throat, coughing, reduce, appetite, stamina, vigourous, sports.
Does smoking a cigarette really help a person to relax?	confusing evidence, nicotine, calm nerves, pep, habit, routine, involves.
Is smoking harmful if you don't smoke steadily?	teen-agers, puff, party, game, group, attractive, restricts, heavy, gradual, increase.

Why do adults lecture young people about smoking, while lighting up their own cigarettes?	rights, condemn, decision, habit, long-time, responsibility, prejudicial, dangers.
Is smoking really related to cancer?	emphasis on advertising, nature, cancer, abnormal, cells, uncontrolled, tissue, organs, invade, malfunction, destruction, factors, extensive, risk, duration, discontinuing, non-smokers, conclusion, individual, emphysema, etc.
How safe are filters in cigarettes?	research, studies, correlation, lung, manufacturers, advertised, excess, tar, harmful, flavour, ingredients, taste, proof, substances.
Is emphysema a serious disease? What is it like? What causes it?	alveoli, bronchial tubes, lungs, heart, capillaries, circulate, exhale, inhale, mucus, oxygen, air pollution, etc.

RESOURCES FOR TOBACCO UNIT FOR ELEMENTARY SCHOOLS

(It is essential for teachers to have current information on the use of tobacco.)

Articles and research findings appear frequently in professional journals and in the popular press. Since bibliographies soon become outdated, the following items are recommended but are neither inclusive nor final.

A. Prescribed Texts

See current issue of the Prescribed Textbook List.

B. Supplementary References

1. Pamphlets and reprints as available from:

   (a) Cancer Society
   721 Government Street,
   Victoria, B.C.

   (b) B.C. Heart Foundation,
   620 View Street,
   Victoria, B.C.

   (c) B.C. Tuberculosis Christmas Seal Society,
   906 West Broadway,
   Vancouver 9, B.C.

2. Pamphlets and reprints as available from local Public Health Office.

C. Various Local Resources

1. People: pharmacist, physician, public health personnel, fire marshall, etc.

2. Reference Sources: public library, school or district resource centre.

3. News media: papers, radio, T.V.

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